VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims:

Claims 1-3, 6-11, 13, 17-19, and 22-24 have been amended as follows:

1. (Amended) An inertial sensor made of semiconductor material, comprising a stator element and a rotor element electrostatically coupled together; and an actuator ~~means~~ made of semiconductor material, coupled to said rotor element and controlled so as to compensate ~~the~~a position offset of the rotor element.

2. (Amended) The inertial sensor of Claim 1, wherein said actuator means comprise at least an actuator element comprising a first mobile arm extending from said rotor element and at least a first fixed arm facing said first mobile arm.

3. (Amended) The inertial sensor of Claim 2, wherein said first mobile arm is provided with a plurality of mobile electrodes extending transversely with respect to the first mobile arm towards said first fixed arm; and wherein said first fixed arm is provided with a plurality of fixed electrodes extending transversely with respect to ~~the~~said first fixed arm towards said first mobile arm.

6. (Amended) The inertial sensor of Claim 2, wherein said actuator ~~means~~ comprises a plurality of ~~said~~ actuator elements.

7. (Amended) The inertial sensor of Claim 6, wherein said rotor element has a circular structure and said actuator ~~means~~ comprises at least one pair of said actuator elements arranged on diametrically opposite sides of said rotor element.

8. (Amended) The inertial sensor of Claim 7, wherein said actuator ~~means~~ comprise two actuator groups, each actuator group formed of at least two said actuator elements and arranged on diametrically opposite sides of said rotor element.

9. (Amended) The inertial sensor of Claim 6, wherein said rotor element has a circular structure and said actuator ~~means~~ comprises four said actuator elements, each actuator element arranged in a respective quadrant of said rotor element.

10. (Amended) The inertial sensor of Claim 9, wherein said actuator ~~means~~ comprises four actuator groups, each actuator group formed of at least two said actuator elements and each actuator group arranged in a respective quadrant of said rotor element.

11. (Amended) The inertial sensor of Claim ~~1~~ 2, wherein said rotor element comprises a suspended mass and a plurality of second mobile arms extending from said suspended mass, and said stator element comprises a plurality of second fixed arms, each facing a respective said second mobile arm.

13. (Amended) A method for compensating the position offset of an inertial sensor made of semiconductor material and having a stator element and a rotor element electrostatically coupled together; comprising moving said rotor element to compensate for ~~the~~a position offset thereof.

17. (Amended) The method of Claim 16, wherein said generating said potential difference comprises calculating ~~the~~a difference between said unbalancing signal and a reference signal and generating said potential difference as a function of said calculated difference.

18. (Amended) The method of Claim 17, wherein said generating said potential difference comprises generating a digital correction word as a function of said difference between said unbalancing signal and ~~a~~said reference signal, and carrying out a digital-to-analog conversion of said digital correction word.

19. (Amended) An inertial sensor, comprising:

a sensor element, comprising:

a stator;

a rotor; and

an actuator formed on the sensor element, the actuator comprising a fixed arm connected to one of the stator and the rotor and a mobile arm connected to the other of the stator and the rotor, the actuator configured to adjust ~~the~~ positions of the stator and the rotor relative to one another in response to a driving signal.

22. (Amended) The sensor of Claim 20, wherein the stator and the rotor are configured to form a capacitive element that generate a first capacitive signal and a second capacitive signal, and wherein the driver circuit comprises a first amplifier stage coupled to the capacitive element and configured to receive the first and second capacitive signals and to generate first and second capacitive value signals; a second amplifier stage coupled to the first amplifier stage and configured to receive the first and second capacitive value signals and to generate ~~the~~a difference signal in response thereto.

23. (Amended) The sensor of Claim 22, wherein the driver circuit further comprises a processing stage coupled to the second amplifier and configured to receive the difference signal and to compare the difference signal to ~~the~~a reference signal and to generate ~~the~~a driver signal in response thereto.

24. (Amended) The sensor of Claim 23, wherein the driver circuit further comprises a filter network coupled between the second amplifier stage and the processing stage, the filter network configured to receive the difference signal from the second amplifier stage and to output a modified difference signal having a value equal to ~~the~~a mean value of the difference signal.

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